Fleyshman, N.

SAVIN, G.N.; FLEYSHMAN, N.P.

Axisymmetric bending of a reinforced-rim annular plate of variable thickness. Nauch.zap. IMA L'viv.fil. AN URSR no.1:93-98 '53.
(Elastic plates and shells) (MLRA 8:11)

FLEYSHMAN, N.P., dotsent.

Equivalent reinforcement of openings in plates. Dop.ta pov. L'viv.un. no.4, pt.2:73 '53. (MLRA 9:11)

(Deformations (Mechanics))

FLEYSHMAN, N.P.

Deflection of a circular ring-shaped plate, the edge of which is fastened by a thin elastic ring. Nauk.zap.L'viv.un. 22:84-95 '53. (Elastic plates and shells)

FLEYSHMAN, N.P.

Reinforcing the edge of curvilinear openings in thin plates. Dop. AN URSR no.4:311-314 '54. (MIRA 8:4)

1. L'vivs'kiy derzhavniy universitet im. Iv.Franka. Predstavleno deystvitel'nym chlenom Akademii nauk USSR G.N.Savinym.
(Electric plates and shells)

FLEYSHMAN, N.P.; GNATIKIV, V.M.

Concentration of stresses near the spherical cavity of a heavily elastic semispace. Dop. AN URSR no.5:361-364 '54. (MLRA 8:7)

1. L'vivs'kiy derzhavniy universitet im. Iv. Franka. Predstaviv diysniy chlen AN URSR G.M. Savin. (Elasticity)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413320014-3"

SOV/124-57-9-10772

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 9, p 133 (USSR)

AUTHOR: Fleyshman, N. P.

TITLE: The Elastic Equilibrium of Plates Reinforced With Curved Stiffening Ribs (Uprugoye ravnovesiye plastin, usilennykh krivolineynym rebrami zhestkosti)

PERIODICAL: Dopovidi ta povidomlennya L'vivs'k. un-t, 1955, Nr 6, part 2, pp 92-95

ABSTRACT: The author examines the first basic problem pertaining to the flexure of an isotropic thin plate, the middle surface of which occupies a certain multiconnected finite portion S of the plane $z = x + iy$ having a boundary L, which boundary is composed of a plurality of $m + 1$ simple curves $L_1, \ldots L_{m+1}$. The plate is reinforced by l annular stiffening ribs made of a material different from that from which the plate is made; the axial lines of these ribs are designated as $\gamma_1, \ldots, \gamma_l$. The regions enclosed within the contours $\gamma_1, \ldots, \gamma_l$ are assumed to be singly connected. The lines $\Gamma = \gamma_1 + \ldots + \gamma_l$ and L do not touch or intersect each other anywhere. Posed thus, the problem reduces to determining the two functions $\phi(z)$ and $\psi(z)$, which

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The Elastic Equilibrium of Plates Reinforced With Curved Stiffening Ribs

within the region S are piecewise holomorphic with the line of discontinuities Γ and the l functions $I_k(t)$ determined on the contours $\gamma_1, \ldots, \gamma_k$, respectively. The functions $\phi(z)$ and $\psi(z)$ are determined by the linear-conjugate method.

A. Ya. Gorgidze

Card 2/2

FLEYSHMAN, N.P.

"One case of thin plate bending." M.G.Pinskii. Reviewed by N.P.Fleishman. Prikl.mekh.2 no.2:229 '56. (MLRA 9:10)
(Elastic plates and shells) (Flexure) (Pinskii, M.G.)

FLEYSHMAN, N. P.

124-11-13016

Translation from: Referativnyy Zhurnal, Mekhanika, 1957, Nr. 11, p. 102 (USSR)

AUTHOR: Fleyshman, N. P.

TITLE: Influence of a Stiffening Rib on the Flexure of an Annular Plate with Peripheral Restraint. (Vliyaniye rebra zhestkosti na izgib kol'tsevoy plity s zashchemlennym vneshnim krayem)

PERIODICAL: Nauchn. zap. in-ta mashinoved. i avtomatiki, AN USSR, 1957, Nr 6, No. 5, pp 92-99

ABSTRACT: By means of using the function of a complex variable, a solution is found for the problem of the flexure of an annular plate subjected to an arbitrary load and restrained along its periphery.

The flexure of the plate is divided into two components, the first of which is characterized as the flexure of an un-reinforced plate under the action of the given load, and the second of which accounts for the action of the stiffener ring.

The solution employs the results of the Author's earlier work (Uch. zap. L'vovskogo gos. un-ta, ser. fiz.-mat., 1953, Vol 22, Nr 5, p 84. Ref. Zhurn. Mekh., 1954, Nr. 9, 4898)

(M. P. Sheremetyev)

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FLEYSHMAN, N.P.

Remarks on an article by M.P. Sheremet'ev. Dop. ta pov. L'viv. un. no.7 pt.3:292-296 '57. (MIRA 11:2)
(Strains and stresses)

124-58-9-10296

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 9, p 128 (USSR)

AUTHOR: ~~Fleyshman~~ [Fleyshman, N. P.]

TITLE: Elastic Equilibrium of a Plate Reinforced by Ribs With Variable Curvature (Uprugoye ravnovesiye plity s rebrami zhestkosti peremennoy krivizny) [Pruzhna rivnovaha plyty z rebramy zhorstkosti zminnoyi kryvyzny]

PERIODICAL: Nauk. zap. L'vivsk. un-t. 1957, Vol 44, pp 5-16

ABSTRACT: A solution is given for the problem of the flexure of a thin sheet having a number of holes and reinforced by closed annular stiffening ribs the axis of which, in general, has a variable curvature. The stiffening ribs are considered as thin elastic rings of constant flexural and torsional rigidity, the stress distribution in which is described by the theory of small deformations of thin curvilinear bars. The problem of the flexure of such a multiply-connected plate is reduced to the problem of a system of boundary equations relative to the Kolosov-Muskhelishvili functions $\varphi_k(z)$ and $\psi_k(z)$ (for k=0,1,2,...).

D. V. Vaynberg

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1. Plates--Elasticity 2. Plates--Properties 3. Plates--Analysis 4. Mathematics--Applications

FLEYSHMAN, N.P.

Elastic equilibrium of a plate with stiffeners of variable curvature.
Nauk zap. L'viv. un. 44 no.8:17-21 '57. (MIRA 11:6)
(Elastic plates and shells)

FLEISHMAN, N.P.

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb '60.

268. L. N. Stavraki (Kuibishev): Strain design and general stability of structures.

269. L. N. Stavrayt (Kuibishev): A general method of solving non-linear problems of structural mechanics.

270. R. D. Stepanov (Moscow): A contribution to the non-linear problem of plate flutter.

271. L. G. Stepanskii, E. F. Onkeev (Moscow): On the use of variational principles for the approximate solution of some problems of plastic equilibrium.

272. A. I. Strelbitskaia (Kiev): Experimental investigation of the oblique bending of steel beams beyond the elastic limit.

273. A. S. Struganov (Moscow): Strength and visco-plastic flow of soils.

274. G. I. Ter-Stepanian (Erevan): The relation between pore pressure and rate of creep of slopes.

275. L. A. Tolokonnikov (Tula): Finite plastic strains of non-linearly deformed bodies.

276. A. D. Tomlenov (Moscow): Piercing of metals by a spherical punch considering contact friction.

277. Ia. L. Turchinskaia (Moscow): An asymptotic method of designing flexible blades of variable pitch at high speeds of rotation.

278. R. V. Tumen (Moscow): Application of similarity methods to the analysis of the flow of rubber compounds.

279. A. A. Trapeznikov, T. G. Shalopalkina (Moscow): Dependence of the maximum elastic and discontinuous strains of aluminum-naphthenate gels on strain rates.

280. S. A. Tumarkin (Moscow): An asymptotic method for the design of toroidal shells.

281. V. K. Turkin (Moscow): Some problems of soil dynamics.

282. N. V. Zvolinskii (Kazan): The flow in the boundary layer of an elastic, visco-plastic medium.

283. A. G. Ugodchikov (Gorkii): Some problems concerning the analysis of stresses in shrink fits.

284. S. V. Uzhik (Moscow): On strength and rupture criteria for metals in the presence of stress concentrations.

285. V. I. Ulitskii (Kiev): Some problems of non-linear bridges.

286. A. A. Umanskii (Moscow): Analogy and model methods in problems of structural mechanics concerning bars and thin-walled structures.

287. M. T. Urazbaev (Tashkent): The problems of seismic strength of fluid supported hydraulic structures.

288. Ia. S. Ufliand (Leningrad): Application of integral transformations to the solution of some problems concerning an elastic wedge.

289. I. N. Fadeeva (Moscow): Deformations of plastic clays in moulding.

290. I. V. Fedorov (Moscow): Elastic-plastic equilibrium of an acute granular wedge.

291. R. L. Falkman (Dnepropetrovsk): Stability and vibrations of orthotropic plates of variable thickness.

292. A. P. Filippov (Kharkov): Extensional vibrations of turbine discs.

293. M. M. Filonenko-Borodich (Moscow): On the possibility of generalizing the Mohr and Huber-Mises-Hencky theories of rupture.

294. N. P. Fleishman (Lvov): Some problems concerning the bending of plates and shells with stiffeners.

295. L. M. Flitman (Moscow): On the impact of a wave on a heavy rigid sphere embedded in an elastic medium.

296. V. A. Florin (Leningrad): Some problems concerning rock formations of hydraulic structures.

297. V. A. Florin (Leningrad): Present state and problems of soil mechanics.

298. V. A. Florin (Leningrad): Flow conditions for saturated sands.

299. V. V. Florina (Leningrad): Experimental study of real and apparent friction in vibrating soils.

300. B. E. Frydlin, E. M. Shakhnovskii (Kiev): On the construction of Green's functions for the equilibrium problem of shallow shells.

301. S. E. Frelfeld (Kharkov): Further development of the initial rheological equation.

302. V. M. Frolov (Moscow): Temperature stresses in cantilever plates and their effect on stiffness.

29186
S/021/60/000/010/008/016
D251/D303

10.6000 2607 1327

AUTHOR: Fleyshman, N.P.

TITLE: The influence of a reinforcing ring on the stresses in a cylindrical shell with a circular hole

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 10, 1960, 1353 - 1357

TEXT: A cylindrical shell with a small circular hole in the side surface, reinforced by a thin eleastic ring is considered. There is a constant internal pressure p_o. In the absence of the hole the stressed state in the shell would be given by the stresses $S_1 = ph$ $S_2 = qh$ ($2p = q = p_o R/h$, R = radius of the shell). [Abstractor's note: h not defined]. The solution of the reinforced circular hole problem is given by a stress function σ. With the accuracy of second-order terms in the small parameter

$$\beta = \frac{\sqrt[4]{3(1 - \nu^2)}}{2\sqrt{Rh}}$$

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The influence of a reinforcing ...

the imaginary and real parts of o are given by

$$Im\sigma = \frac{2A_0}{\pi}\left(\ln\frac{\rho}{\rho_0} + \gamma'\right) - \frac{C_0}{\pi} - \left(C_0 + \frac{2F_1}{\rho^2}\right)\frac{\cos 2\lambda}{\pi} +$$
$$+ \beta^2\left[\frac{2A_1}{\pi}\left(\ln\frac{\rho}{\rho_0} + \gamma'\right) + \frac{B_1}{2} - \frac{A_0\rho^2}{4} + \left(\frac{C_0\rho^2 - A_0\rho^2}{4} - \frac{C_1}{\pi}\right)(1 + \cos 2\lambda) -\right.$$
$$\left. - \frac{2F_2}{\pi\rho^2}\cos 2\lambda\right].$$

(1)

$$Re\sigma = w = \frac{\beta^2}{\pi}\left\{\frac{\pi A_1}{2} - 2B_1\gamma' + D_1 - \frac{F_1}{2} + 2A_2\rho^2\ln\frac{\rho}{\rho_0} - 2B_1\ln\frac{\rho}{\rho_0} + \right.$$
$$+ A_0\left(2\rho^2\ln\frac{\rho}{\rho_0} + 2\rho^2\gamma' - \rho^2\right) + C_0\rho^2\left(\frac{1}{4} - \ln\frac{\rho}{\rho_0} - \gamma'\right) + \quad (1)$$
$$+ \left[A_0\rho^2\left(\ln\frac{\rho}{\rho_0} + \gamma'\right) + C_0\rho^2\left(\frac{1}{6} - \ln\frac{\rho}{\rho_0} - \gamma'\right) + D_1 - \frac{2E_2}{\rho^2} - \frac{4H_2}{\rho^2}\right]\cos 2\lambda -$$
$$\left. - \left(\frac{C_0}{12}\rho^2 + \frac{F_1}{2} + \frac{4H_2}{\rho^2} + \frac{24M_3}{\rho^4}\right)\cos 4\lambda\right\}.$$

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where (ρ, λ) are polar coordinates, with the pole at the center of the hole and the polar axis along a generator of the cylinder

$$\gamma' = \ln \frac{\gamma \rho_0 \beta}{\sqrt{2}}, \quad \ln \gamma = 0.577216$$

and ρ_0 is the radius of the hole. σ differs from the A.Y. Lur'ye function, only in the additional real term

$$\frac{2}{\pi} \beta^2 A_2 \rho^2 \ln \frac{\rho}{\rho_0} .$$

To evaluate the 12 unknown coefficients of σ the boundary conditions of the junction of the shell and ring must be known. In the case when one of the principal axes of inertia of the cross-section of the ring lies in the mean surface of the shell, the solution is found to be

$$A_0 = \frac{\alpha\pi\rho_0^2(p+q)}{4Eh} \cdot \frac{(1+\nu)\alpha_* - (1-\nu)\delta_4}{(1+\nu)\alpha_* + (1+\nu)\delta_4},$$

$$C_0 = \frac{\alpha\pi\rho_0^2(p-q)}{2Eh\alpha_0}[\alpha_*^2 + \alpha_*(\delta_4 + 4\delta_3) - 12\delta_3\delta_4](1+\nu). \qquad (3)$$

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$$F_1 = -\frac{\alpha\pi\rho_0^4(p-q)}{8Eh\alpha_0}[(1+\nu)\alpha_*^2 + 4\alpha_*(3+\nu)\delta_3 - \alpha_*(1-\nu)\delta_4 - 12(1+\nu)\delta_3\delta_4],$$

$$A_1 = \frac{\pi\rho_0^2}{2}\left(A_0 - \frac{1}{2}C_0\right)\frac{\alpha_*(1+\nu) - (1-\nu)\delta_4}{(1+\nu)(\alpha_* + \delta_4)},$$

(3)

$$C_1 = \frac{\pi\rho_0^2}{2\alpha_0}(C_0 - A_0)(\alpha_*^2 + 4\alpha_*\delta_3 + \alpha_*\delta_4 - 12\delta_3\delta_4)(1+\nu),$$

$$F_2 = -\frac{\pi\rho_0^4}{3\alpha_0}(C_0 - A_0)[\alpha_*^2(1+\nu) + 4\alpha_*(3+\nu)\delta_3 - \alpha_*(1-\nu)\delta_4 - 12(1+\nu)\delta_3\delta_4],$$

(3)

$$A_2 = \frac{\alpha\pi\rho_0^2}{2Eh^3}p_0R - \left(A_0 - \frac{1}{2}C_0\right),$$

$$B_1 = \frac{\rho_0^2}{2(1-\nu+\delta_1)}\left\{(1+\nu-\delta_1)\left[\left(2\gamma' - \frac{1}{2}\right)C_0 + 2(1-2\gamma')A_0\right] - (3+\nu-\delta_1)\frac{\alpha\pi\rho_0^2 q}{Eh}\right\},$$

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$$D_1 = \frac{\rho_0^2}{2\alpha_9}(\alpha_1 A_0 - \alpha_2 C_0), \quad H_3 = \frac{\rho_0^2}{48\alpha_{10}}(\alpha_5 \rho_0^2 C_0 - \alpha_6 F_1),$$

$$E_2 = -\frac{\rho_0^4}{12\alpha_9}(\alpha_3 A_0 + \alpha_4 C_0) - 2H_3, \quad M_3 = \frac{\rho_0^4}{1440\alpha_{10}}(\alpha_7 \rho_0^2 C_0 + \alpha_8 F_1), \qquad (3)$$

where

$$a = \sqrt{12(1-\nu^2)}, \quad \alpha_* = 12(1-\nu)\rho_0^2/h^2,$$

$$\alpha_9 = (1+\nu)\alpha_*^2 + \alpha_*(3+\nu)(4\delta_3+\delta_4) + 12(3-\nu)\delta_3\delta_4,$$

$$\alpha_1 = (1-\nu)[4\gamma'(1-\nu) + (5-\nu)] + \delta_1[(1-\nu)(4\gamma'+3) + 2(3+\nu)] +$$
$$+ \delta_2[2(1-\nu)(2\gamma'+1) + (3+\nu)] - 3\delta_1\delta_2(4\gamma'+1),$$

$$\alpha_2 = (1-\nu)\left[4\gamma'(1-\nu) + \frac{1}{3}(13-\nu)\right] + \delta_1\left[4(1-\nu)\gamma' + \frac{1}{3}(25-\nu)\right] +$$
$$+ \delta_2\left[4(1-\nu)\gamma' + \frac{1}{3}(13-\nu)\right] - \delta_1\delta_2(12\gamma'+1), \qquad (4)$$

$$\alpha_3 = -6\gamma'(1-\nu)^2 - (9-4\nu-3\nu^2) + \delta_1[6\gamma'(\nu-3) + (3\nu-13)] +$$
$$+ \delta_2[6\gamma'(1+\nu) + (3\nu+5)] + 9\delta_1\delta_2(2\gamma'+1),$$

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$$a_4 = 6\gamma'(1-\nu)^2 + 2(\nu^2-\nu+4) + \delta_1[6\gamma'(3-\nu)+2(5-\nu)] -$$
$$-\delta_2[6\gamma'(1+\nu)+2(2+\nu)] - 6\delta_1\delta_2(3\gamma'+1),$$
$$a_5 = (1-\nu)(1-3\nu) - \delta_1(5+3\nu) + \delta_2(1-3\nu) - 45\delta_1\delta_2,$$
$$a_6 = 4[3(1-\nu^2) + \delta_1(15+3\nu) + 3\delta_2(3+\nu) + 45\delta_1\delta_2],$$
$$a_7 = (19\nu - 3 - 10\nu^2) - \delta_1(9-10\nu) + \delta_2(6+10\nu) + 150\delta_1\delta_2, \quad (4)$$
$$a_8 = 6[(6\nu - 5\nu^2 + 3) + (\delta_1+\delta_2)(9+5\nu) + 75\delta_1\delta_2],$$
$$a_9 = (1-\nu)(3+\nu) - (5+\nu)(\delta_1+\delta_2) + 3\delta_1\delta_2,$$
$$a_{10} = (1-\nu)(3+\nu) + (9+\nu)(\delta_1+\delta_2) + 15\delta_1\delta_2,$$
$$\delta_1 = \frac{A}{\rho_0 D}, \quad \delta_2 = \frac{C}{\rho_0 D}, \quad \delta_3 = \frac{B}{\rho_0 D}, \quad \delta_4 = \frac{E_1 F \rho_0}{D},$$

ν is Poisson's coefficient, D is the cylindrical rigidity under bending, h is the thickness of the shell. The case $\delta_1 = \delta_2 = \delta_3 = \delta_4 = 0$ gives Lur'ye's solution. The case $\delta_1 = \delta_2 = \delta_3 = \delta_4 = 0$

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is the limiting case of absolute rigidity of the ring or washer. By investigating the values of
$\frac{1}{q}\sigma_{\lambda}^{P}$, $\frac{1}{q}\sigma_{\rho}^{N}$ and $\frac{1}{q}\sigma_{\rho}^{P}$, where P is the point ([illegible], 0) and N is the point $(\rho_0, \pi/2)$ it is found that by reinforcing the edge of the hole a considerable decrease in the stress concentration coefficient may be obtained. There are 1 figure and 2 Soviet-bloc references.

ASSOCIATION: L'vivs'kyy derzhavnyy universytet (State University of L'viv)

PRESENTED: by H.M. Savin, Academician AS UkrSSR

SUBMITTED: November 17, 1959

Card 7/7

S/124/63/000/002/030/052
D234/D308

AUTHOR: Fleyshman, N.P.

TITLE: Design of plates with curvilinear rigidity ribs

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 2, 1963, 14, abstract 2V88 (Tr. Konferentsii po teorii plastin i obolochek, 1960, Kazan', 1961, 399-407)

TEXT: The author considers a thin plate reinforced with several closed curved ribs. These are assumed to be so situated that one of their principal axes of inertia of their cross sections is in the middle plane of the plate. The theory of the functions of complex variables is used. The problem is reduced to the boundary problem for two piecewise holomorphic functions. In particular, the author considers the first principal problem for a circular plate with curved ribs, reducing the problem first to a system of singular integro-differential equations, and then to an equivalent system of Fredholm's integral equations of the second kind, the solvability of which is proved. A solution in quadratures is given for

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Design of plates ...

the bending of an arbitrarily loaded infinite plate with a reinforced circular hole. The author also solves the problem of the choice of dimensions for the rectangular section of a rib securing the minimum weight of a circular or a ring-shaped plate subjected to an axially symmetrical load, in designing for strength with respect to maximum normal stresses. A detailed description of the latter solution is given by the author in the collection Raschety na prochnost', no. 8, M., Mashgiz, 1962, 127-135.
[Abstracter's note: Complete translation]

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S/122/61/000/005/004/013
D221/D304

24.4200

AUTHORS: Fleyshman, N.P., Candidate of Physical and Mathematical Sciences, Docent, and Grach, S.A.

TITLE: Axial symmetry bending of round and ring plates with concentric draws

PERIODICAL: Vestnik mashinostroyeniya, no. 5, 1961, 19 - 23

TEXT: The authors consider a plate with a drawn portion, and subject to an arbitrary load, (Fig. 1), as a composite elastic body, consisting of a round plate ($r \leqslant R$) with a thickness h_1, ring plate ($R \leqslant r \leqslant R_1$) and h_2 thick, and two thin stiffening ribs. The interaction between various parts is shown diagrammatically in Fig. 2. Sags w and radial displacements v_r or the central surface are discussed by M.M. Filonenko-Borodich (Ref. 1: Teoriya uprugosti (Theory of Elasticity), Fizmatizdat, 1959). For $0 \leqslant r \leqslant R$,

$$w_1 = w^0 + D_3 + D_4 \frac{r^2}{R^2}, \tag{1}$$

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and $$v_{r_1} = A_1 r; \qquad (2)$$

whereas for $R < r < R_1$ -

$$w_2 = w^{oo} + C_1 \ln \frac{r}{R} + C_2 \frac{r^2}{R^2} \ln \frac{r}{R} + C_3 + C_4 \frac{r^2}{R^2}, \qquad (3)$$

X

and $$v_{r_2} = \frac{B_1}{r} + B_2 r \qquad (4)$$

are deduced. In the above it is assumed that $w^o = w^o(r)$ and $w^{oo} = w^{oo}(r)$ are known arbitrary quotients of solution of the differential equation of bending $\Delta\Delta w = q_i(r)/D_i$, where $q_i(r)$ is the load of the corresponding part of plate $(i = 1,2)$; D_i is the cylindrical rigidity on bending. The above equations allow the radial and transversal forces as well as moments which act on the stiffening ribs to be determined. The resulting twists are given by S.P. Timoshen-

ko (Ref. 2: Soprotivleniye materiyalov (Resistance of Materials), t. II, OGIZ, Gostekhizdat, 1946), where it is assumed that the height of drawn part is insignificant. Radial displacements of points on axial lines of stiffening ribs are expressed by

$$\left.\begin{aligned} u_1 &= -\frac{R^2}{EF}(N_1 - N_2)_{r=R}; \\ u_2 &= -\frac{R_1^2}{E_* F_*}(N_2)_{r=R_1}, \end{aligned}\right\} \qquad (7)$$

X

where A and EF are the rigidity on bending and tension of internal rib; $A = EJ$; A_* and E_*F_* are rigidities due to bending and tension of the external rib; $A_* = E_*J_*$ (J and J_* are moments of inertia of surfaces of cross sections in the ribs); E and E_* are moduli of elasticity of materials of ribs. When $h = h_*$, then the plate is supported by two stiffening ribs, symmetrically disposed with re-

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Axial symmetry bending of round ...

spect to the central plane. If $D_1 = 0$, then the solution is that of a plate with a central circular hole. A case is then considered of bending a plate due to concentrated load applied at its center. In the set of equations there is a coefficient β which characterizes the effect of the drawn part, and it depends on parameters A, EF, h_0 and η. Tabulated data reveal that sag of plate will be minimum when $\eta \approx 1.5$. Graphs of bending stresses $\sigma_r^o = 6M_r/h^2$ and $\sigma_\theta^o = 6M_\theta/h^2$ for $\eta = 1.5$ are plotted. It should be noted that in addition to bending stresses, the plate is also subject to normal stresses σ_{ri}^* and $\sigma_{\theta i}^*$, which are uniformly distributed along the thickness of plate. Calculations demonstrated that stresses σ_r^* and σ_θ^* are practically independent from ratio b/R (b is the width of rib in the drawn part). Their maximum is at $h_0/h \approx 0.2$. Stresses σ_r^o and σ_θ^o are superimposed on stresses σ_r^* and σ_θ^*, and therefore, the total stress in a plate with a drawn part is lesser than in a X

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Axial symmetry bending of round ... S/122/61/000/005/004/013
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plain plate. At the same time, maximum sag in the center of a plate with a drawn part is 4 times smaller than the maximum bending of a plain plate. There are 4 figures, 3 tables and 5 Soviet-bloc references.

Fig. 1.

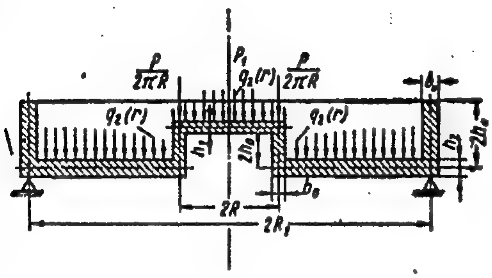

Рис. 1.

Fig. 2.

FIG. 2

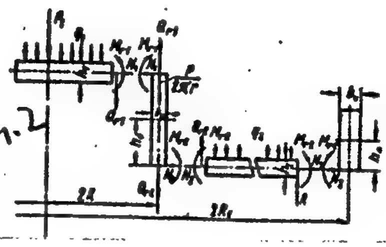

Рис. 2.

X

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30320

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S/145/61/000/007/004/009
D221/D301

AUTHOR: Fleyshman, N.P., Candidate of Physic on Mathematical Sciences, Docent

TITLE: Some inverse problems for plates with holes, whose edges are reinforced by thin ribs

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, no. 7, 1961, 27-38

X

TEXT: The first problem concerns isotropic and anisotropic thin plates with one or more holes reinforced by thin isotropic ribs. The rigidity of the ribs with respect to bending (A) and to torsion (C), are generally functions of the arc(s) of the axial line of rib. One of the main axes of inertia of the rib cross section is in the mean plane of the plate, and axes Ox, Oy are also chosen in the latter, while OZ is directed downwards. The author designates as the equivalent strengthening rib, the one that replaces wholly the action of the lacking part of

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Some inverse problems ...

the plate for a given load. Consequently the equivalent system eliminates the stress concentration near the hole. The problem consists in determining A and C when the main sag w_0, and the shape of the holes are given. The author quotes the results of his paper (Ref. 9: Dopovidi AN URSR, 1954, no. 4). The solution of the first problem is then represented in terms of functions of a complex variable. The author considers as an example the bending of a rectangular plate weakened by an elliptic hole, by constant moments applied at the edges. The second problem consists in determining the form of a neutral hole with reinforced edge, when the load and the rigidity of the reinforcing rib are given; a neutral hole is defined as one which does not alter the main sag of a thin isotropic plate. The boundary condition is written in the form $a_1\dot{t}^2 + a_2\ddot{t} + a_3\dot{t} + a_4 = 0$, where $\dot{t} = \frac{dt}{ds}$ is the unknown function, while $a_1 \ldots a_4$ are provisionally assumed as given. After mathematical elaboration, the rigidity is obtained in the form of equation of fourth degree

X

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with respect to A^2. Its solution allows finding A as a function of x and y. The contour of the neutral hole is determined from identity Eq. (23),

$$\frac{dy}{dx} = \frac{i(\bar{t} - t)}{t + \bar{t}}$$

by substituting the expression obtained for t which gives a single-parameter family of integral curves, each corresponding to a determined rigidity. The problem is considerably simplified if A/Ç is supposed to be equal to 1; in this case the form of the hole is found to be independent of A. Two examples are considered: 1) Twisting a rectangular plate by constant moments, 2) two-sided bending of a rectangular plate by constant moments applied at the edges. There are 2 figures, 1 table and 12 Soviet-bloc references. X

ASSOCIATION: L'vovskiy gosudarstvennyy universitet (L'vov State University)

SUBMITTED: March 16, 1961

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10.7000 also 3108

S/198/61/007/001/002/008
D205/D305

AUTHOR: Fleyshman, N.P., (L'viv)

TITLE: Boundary conditions for a shell with a hole whose edge is reinforced with a thin elastic ring

PERIODICAL: Prykladna mekhanika, v. 7, no. 1, 1961, 34 - 42

TEXT: The boundary conditions for a shell with a hole whose edge is reinforced with a thin elastic ring are investigated, first in the case of a thin isotropic shell, and then in the special case of a depressed shell. These conditions are then transformed into expressions in terms of stress and sag functions. In the case of a thin isotropic shell, the axis of the thin strip (curve L) which acts as a firm rib and reinforces the edge of the hole lies in the given part of the shell. $\vec{n}$, $\vec{b}$, and $\vec{\tau}$ denote a system of perpendicular axes lying respectively along the principal normal, binormal and tangent to L. The axes of the principal trihedral of the curve L, $\vec{\xi}$, $\vec{\eta}$, $\vec{\zeta}$ make angles with $\vec{n}$, $\vec{b}$, $\vec{\tau}$, whose cosines are shown in

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the table. The equations of deformation of the ring are derived from the theory of small deformations of thin strips. The first and second groups of Klebs relations are then given together with the equations of equilibrium

$$\frac{dV_\xi}{ds} + \omega_\eta V_\zeta - \omega_\zeta V_\eta + p_\xi = 0;$$

$$\frac{dV_\eta}{ds} + \omega_\zeta V_\xi - \omega_\xi V_\zeta + p_\eta = 0; \qquad (1.5)$$

$$\frac{dV_\zeta}{ds} + \omega_\xi V_\eta - \omega_\eta V_\xi + p_\zeta = 0;$$

$$\frac{d}{ds} L_\xi + \omega_\eta L_\zeta - \omega_\zeta L_\eta - V_\eta = 0;$$

$$\frac{d}{ds} L_\eta + \omega_\zeta L_\xi - \omega_\xi L_\zeta + V_\xi = 0; \qquad (1.6)$$

$$\frac{d}{ds} L_\zeta + \omega_\xi L_\eta - \omega_\eta L_\xi + m_\zeta = 0,$$

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Boundary conditions for a shell ...

where $\vec{V}(V_\xi, V_\eta, V_\zeta)$ and $\vec{L}(L_\xi, L_\eta, L_\zeta)$ are the principal vector and principal moment of the internal forces on the element s of the ring, and $\vec{p}(p_\xi, p_\eta, p_\zeta)$ and $\vec{m}(0, 0, m_\xi)$ are the external force and bending moment which act on the unit length of the axis of the ring. By suitable substitution and evaluation, the boundary conditions are obtained in the form

$$\begin{aligned} h\sigma_n &= S^0 + \omega_\xi V_\zeta + \Phi_2\left[\omega_\zeta L_\xi - \omega_\xi L_\zeta + \frac{\partial L_\eta}{\partial s}\right] + \\ &\quad + \Phi_1\left[\omega_\zeta L_\eta - \omega_\eta L_\zeta - \frac{\partial L_\xi}{\partial s}\right]; \\ h\tau_n &= T^0 - \frac{\partial V_\zeta}{\partial s} + \left(\omega_\zeta \omega_\xi - \omega_\eta \frac{\partial}{\partial s}\right) L_\eta - \left(\omega_\zeta \omega_\eta + \omega_\xi \frac{\partial}{\partial s}\right) L_\xi; \\ M_n &= M^0 + \omega_\eta L_\xi - \omega_\xi L_\eta - \frac{\partial \Delta_\zeta}{\partial s}; \end{aligned} \tag{1.18}$$

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$$Q_n^* = Q^0 - \omega_n V_\zeta - \Phi_1\left[\omega_\zeta L_\xi - \omega_\xi L_\zeta + \frac{\partial L_\eta}{\partial s}\right] + \\ + \Phi_2\left[\omega_\zeta L_\eta - \omega_\eta L_\zeta - \frac{\partial L_\xi}{\partial s}\right], \tag{1.18}$$

where

$$\Phi_1[\quad] = \left(\omega_\zeta m_1 + l_1 \frac{\partial}{\partial s}\right)[\quad];$$

$$\Phi_2[\quad] = \left(\omega_\zeta l_1 - m_1 \frac{\partial}{\partial s}\right)[\quad].$$

where L_ξ, L_η, L_ζ, V_ζ, are given by

$$L_\xi = A\left(\frac{d}{ds}\theta_\xi + \omega_\eta\theta_\zeta - \omega_\zeta\theta_\eta\right);$$

$$L_\eta = B\left(\frac{d}{ds}\theta_\eta + \omega_\zeta\theta_\xi - \omega_\xi\theta_\zeta\right); \tag{1.15}$$

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$$L_\zeta = C\left(\frac{d}{ds}\theta_\zeta + \omega_\xi\theta_\eta - \omega_\eta\theta_\xi\right). \qquad (1.15)$$

and

$$V_\zeta = E_1F\left(\omega_n w - \omega_b u_n - \frac{\partial u_\tau}{\partial s}\right),$$

$$\omega_n = m_1\omega_\xi - l_1\omega_\eta;\ \omega_b = l_1\omega_\xi + m_1\omega_\eta. \qquad (1.16)$$

(1.18) then give the boundary conditions for the three components of displacement on the junction of the shell with the thin elastic rib. The boundary conditions can be found in a similar manner for the case of a thin elastic strip reinforcing the external contour of the shell. With regard to the case of a depressed shell, it is observed that in this case $\vec{b}$ has a fixed direction and hence the torsion of the axis of the strip remains zero. m_1 and l_1 [Abstrac-

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tor's note: See Table] are likewise zero, thus

$$\omega_\xi = \frac{l_1}{\rho}; \quad \omega_\eta = \frac{m_1}{\rho}; \quad \omega_\zeta = 0, \tag{2.1}$$

where $\frac{1}{\rho}$ is the curvature of the strip. Substitution from (2.1) into (1.18), followed by some simplifications gives

$$Q_n^* = Q^0 + \frac{\partial}{\partial s}\left[\frac{C}{\rho}\left(\frac{\partial^2 w}{\partial n \partial s} + \frac{1}{\rho}\frac{\partial w}{\partial s}\right) - \gamma\frac{\partial^2}{\partial s^2}\left(\frac{u_\tau}{\rho} - \frac{\partial u_n}{\partial s}\right) - \beta\frac{\partial}{\partial s}\left(\frac{\partial^2 w}{\partial s^2} - \frac{1}{\rho}\frac{\partial w}{\partial n}\right)\right] \tag{2.5}$$

where $\beta' = m_1^2 B + l_1^2 A$; $\beta = m_1^2 A + l_1^2 B$; $\gamma = l_1 m_1 (A - B)$. (2.6)

It is observed that in the case of a thin elastic ring reinforcing a hole in a thin lamina when none of the principal axes of inertia of the transverse section of the ring lie in the given surface of the lamina, the boundary conditions on the contour of the junction

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are also given in final form by Eq. (2.5). Some separate cases are then considered. 1) The case of an absolutely flexible ring, when the edge of the shell is not reinforced; 2) The case of an absolutely rigid ring: 3) The case when one of the principal axes of inertia of the transverse section of the ring lies in the given surface of the depressed shell; 4) If in case 3) the axis of the ring has the form of a circle of radius ρ_0 then

$$\begin{aligned} h\sigma_r &= S^0 - \frac{B}{\varrho_0^4}\frac{\partial^3}{\partial\theta^3}\left(u_\theta - \frac{\partial u_r}{\partial\theta}\right) + \frac{E_1F}{\varrho_0^2}\left(\frac{\partial u_\theta}{\partial\theta} + u_r\right); \\ h\tau_{r\theta} &= T^0 - \frac{B}{\varrho_0^4}\frac{\partial^2}{\partial\theta^2}\left(u_\theta - \frac{\partial u_r}{\partial\theta}\right) - \frac{E_1F}{\varrho_0^2}\frac{\partial}{\partial\theta}\left(\frac{\partial u_\theta}{\partial\theta} + u_r\right); \\ M_r &= M^0 + \frac{C}{\varrho_0^2}\frac{\partial}{\partial\theta}\left(\frac{\partial^2 w}{\partial r\,\partial\theta} - \frac{1}{\varrho_0}\frac{\partial w}{\partial\theta}\right) - \frac{A}{\varrho_0^2}\left(\frac{\partial w}{\partial r} + \frac{1}{\varrho_0}\frac{\partial^2 w}{\partial\theta^2}\right); \\ Q_r^* &= -Q^0 + \frac{1}{\varrho_0^3}\frac{\partial}{\partial\theta}\left[C\left(\frac{\partial^2 w}{\partial r\,\partial\theta} - \frac{1}{\varrho_0}\frac{\partial w}{\partial\theta}\right) + A\frac{\partial}{\partial\theta}\left(\frac{\partial w}{\partial r} + \frac{1}{\varrho_0}\frac{\partial^2 w}{\partial\theta^2}\right)\right]. \end{aligned} \qquad (2.19)$$

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is obtained, where the stress, force, and moments are expressed in terms of polar coordinates (r, θ), with the origin at the center of the circle; 5) If the reinforcing ring is a supporting ring, the boundary condition (2.5) reduces to w = 0 and gives the supporting reaction along the supporting contour. Transformation of the boundary conditions (2.5) can also be written in terms of a stress function $\Phi(x, y)$ and a sag function $w(x, y)$. For the transformation, a complex combination

$$\frac{\partial}{\partial s}(u_n + iu_\tau) = \frac{\partial}{\partial s}[\mathring{i}\mathring{t}(u + iv)] = \mathring{i}\mathring{t}\frac{\partial}{\partial s}(u + iv) - \frac{i}{\varrho}[\mathring{i}\mathring{t}(u + iv)], \qquad (3.1)$$

is used, where u and v are the projections of the displacement vector on the Cartesian axes x and y, and ϱ is the radius of curvature of L. There are 1 table and 4 Soviet-bloc references.

ASSOCIATION: L'vivs'kyy derzhavnyy universytet (State University of L'viv)

SUBMITTED: September 12, 1959

YUDIN, Vasiliy Kliment'yevich; ZHESTKOV, S.V., kand. tekhn. nauk, dots., retsenzent; FLEYSHMAN, N.P., dots., retsenzent; SLIN'KO, B.I., red.; SERAFIN, V.T., tekhn. red.

[Design of three-dimensional frames] Raschet prostranstvennykh ram. Kiev, Gos. izd-vo lit-ry po stroit. i arkhit. USSR, 1961. 141 p. (MIRA 15:3)

1. Leningradskiy inzhenerno-stroitel'niy institut (for Zhestkov).
2. L'vovskiy gosudarstvennyy universitet (for Fleyshman).
(Structural frames)

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S/198/61/007/003/011/013
D264/D303

AUTHORS: Fleyshman, N.P., and Shabliy, O.M. (L'viv)

TITLE: The influence of concentric ribs on the frequency of the free oscillations of circular and annular slabs

PERIODICAL: Prykladna mekhanika, v. 7, no. 3, 1961, 326 - 331

TEXT: The authors consider a thin annular isotropic slab whose edges are reinforced with two thin concentric rings (ribs) of constant cross-section of a different material. The axial lines of the inner and outer ribs are L_1, L_2 and their radii are R_1 and R_2 respectively. It is observed that one of the principal axes of inertia of each rib lies in the center plane of the plate. The equation of free oscillation is

$$c^2\Delta\Delta w + \frac{\partial^2 w}{\partial t^2} = 0, \qquad (1.1)$$

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where Δ is Laplace's operator, and E, ν, h, ρ, w are, respectively the modulus of elasticity, the Poisson coefficient, the thickness, the density and the deflection of the plate, and $c^4 = Eh^2/12\rho(1 - \nu^2)$. The solution of (1.1) in polar coordinates is

$$w(r, \theta, t) = W(r, \theta)\cos(pt + \varphi_0), \quad (1.2)$$

where

$$W(r, \theta) = [C_1^* J_n(kr) + C_2^* Y_n(kr) + C_3^* J_n(kr) + C_4^* K_n(kr)]\cos n\theta. \quad (1.3)$$

Here p is the frequency, $k^4 = p^2/c^2$, $J_n(kr)$, $Y_n(kr)$ are Bessel functions of the first and second kinds with real argument, $I_n(kr)$, $K_n(kr)$ are Bessel functions of first and second kinds with imaginary argument. The boundary conditions for the junction of the slab with the ring are also given. Two cases are then considered (a) the inner contour is a carrier ring. (b) The case of axisymmetric oscillations of a circular slab. The edge of the circular slab is attached to a carrier ring. The deflection is

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$$2xJ_0(x)I_0(x) + (b_{20} - \alpha_{12}x^3)[J_1(x)I_0(x) + I_1(x)J_0(x)] = 0. \quad (2.5)$$

where $b_{20} = \delta_{12} + \nu - 1$. (2.5) has infinitely many terms and nearly-periodic roots. The frequency is given by

$$f = \frac{x^2}{2\pi R_2^2}\sqrt{\frac{Eh^2}{12\rho(1-\nu^2)}}, \quad (2.6)$$

where x is a root of (2.5). As an example, a steel slab, R_2 = 140 mm, h = 6 mm is considered. Graphically it is shown that the dependence of the frequency f on δ_{12} for various values of α_{12}. f decreases as the mass of the ring increases and as the rigidity of the ring decreases. To confirm the results a steel slab with a reinforced edge was tested. For a slab and ring of St. 3. steel, R_2 = 140 mm, h = 6 mm, thickness of ring h_1 = 18 mm, b = 5 mm, the fre-

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The influence of concentric ...

quency was found experimentally to be given by $461 \leqslant f \leqslant 470$. The theoretical value if $f = 454$, thus gives a discrepancy of only 2.4%. There are 2 figures and 3 Soviet-bloc references.

ASSOCIATION: L'vivs'kyy derzhavnyy universytet (State University of L'viv)

SUBMITTED: December 17, 1959

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26073 S/198/61/007/004/001/004
D218/D305

AUTHORS: Savin, H.M., and Fleyshman, N.P. (Kyyiv - L'viv)

TITLE: Plates whose rims are reinforced with thin ribs

PERIODICAL: Prykladna mekhanika, v. 7, no. 4, 1961, 349 - 361

TEXT: The combined contact problem with attenuated boundary conditions is first investigated. The authors consider a thin plate with a curvilinear edge which is reinforced by a thin elastic curvilinear rib of a material different from that of the plate. It is assumed that the axis of the rib Γ lies in the plane of the plate xOy, and the contact of the rib with the plate occurs on the cylindrical surface S, which runs along Γ and is normal to the plane. The positive direction of describing Γ is that which keeps the plane on the left-hand-side. On S, only the two following boundary conditions are considered: a) the forces and moments acting between the plate and rib obey Newton's third law; b) the extensions ε_τ and ε_0 of the fibers of the plate and rib equidistant from the

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plane xOy equal each other. The reinforcing rib is taken to be sufficiently thin so that it has only either: I bending rigidity (the case of the bending of a thin plate, or II tensile rigidity (the case of a generalized plane stressed state). In this case the problem is reduced to determining two functions $\phi(z)$ and $\Psi(z)$ which are analytic in the region of the plate and which satisfy the boundary condition

$$a_1\overline{\varphi(t)} + \bar{t}\varphi'(t) + \psi(t) + iK\dot{t}Re\left\{\dot{t}\frac{d}{ds}[a_2\overline{\varphi(t)} - \bar{t}\varphi'(t) - \psi(t)]\right\} = \quad (1.1)$$
$$= f_1(t) - iC_1'\bar{t} + C_2' \text{ на } \Gamma:$$

Here t denotes the affix of the point on Γ, s with corresponding indices denote the arcs counted from some origin $\dot{t} = dt/ds$, and the other quantities are defined by the following formulae: In case I,

$$a_1 = -\frac{3+v}{1-v}; \quad a_2 = -1; \quad K = -\frac{A}{D(1-v)} < 0 \quad (1.2)$$

$$f_1(t) = \frac{1}{D(1-\nu)}[I_2(s) - I_1(s)] - \frac{i\bar{t}A}{D(1-\nu)} Re\left[\bar{t}\frac{d}{ds}\left(\frac{\partial w_0}{\partial x} - i\frac{\partial w_0}{\partial y}\right)\right], \qquad (1.2)$$

$$I_k(s) = -\int_0^s (m_k - i\int_0^{s_1} p_k ds_2)\bar{t} ds_1 \quad (k = 1, 2),$$

where ν is Poisson's coefficient, D is the cylindrical rigidity of the plate, $A = E_1 I$ is the variable (generally) rigidity of reinforcing rib for bending, m_1 and p_1 are the external bending moment and transverse forces acting on the rib, w_0 is some particular solution of Germain's differential equation of bending, m_2 and p_2 are the known bending moment and transverse force on Γ, which correspond to w_0, C_1' and C_2' are the real and complex constants of integration. In case II, with a plate of thickness h,

$$a_1 = 1;\quad a_2 = \frac{3-\nu}{1+\nu};\quad K = \frac{E_1F}{2\mu h} > 0;\quad C_1' = 0; \tag{1.3}$$

$$f_1'(t) = -\frac{i}{h}\int_0^s (P_x - iP_y)\,ds,$$

where E_1F is the variable (in general) rigidity of the rib from tension, μ is the shear modulus of the plate, P_x and P_y are projections of the given external load on the ring, referred to a unit of its length. Writing

$$U(t) = \overline{t\varphi'(t)} + \overline{\psi(t)}, \tag{1.5}$$

the extenuated boundary condition is given by

$$\alpha_2(t)\,[a_1\varphi(t) + t\overline{\varphi'(t)} + \overline{\psi(t)}] - \alpha_3(t)\,\dot{t}\,[\varphi'(t) + \overline{\varphi'(t)}] = f_*(t) \tag{1.9}$$

where

$$a_2(t) = iK(a_1 + a_2); \quad a_3(t) = 2(1 - iK\dot{t}\,\bar{\dot{t}}); \qquad (1.$$

$$f_*(t) = 2f_0(t) - 2iK\dot{t}^2 \frac{d}{ds}\{\bar{\dot{t}} Im\,[i\dot{t}\bar{f}_0(t)]\} = 2\overline{f_1(t)} - 2iK\dot{t}^2 \frac{d}{ds}\{\bar{\dot{t}} Im\,[i\dot{t}\overline{f_1(t)}]\} + \qquad (1.10)$$

$$+ a_3(t)(\bar{C}_2' + iC_1' t).$$

$\phi(z)$ and $\psi(z)$ are then written in the form

$$\varphi(z) = \varphi^0(z) + \varphi_*(z); \quad \psi(z) = \psi^0(z) + \psi_*(z) \qquad (1.12)$$

where $\phi^0(z)$ and $\psi^0(z)$ are the known solutions for the case when the edge of the plate is not reinforced $(K = 0)$ and $\phi_*(z)$, $\psi_*(z)$ represent the effect of the rib. Then

$$a_2(t)[a_1\varphi_*(t) + t\overline{\varphi_*'(t)} + \overline{\psi_*(t)}] - a_3(t)\dot{t}[\varphi_*'(t) + \overline{\varphi_*'(t)}] = f_{**}(t), \qquad (1.13)$$

where

$$f_{**}(t) = f_*(t) - a_2(t)f_0(t) + a_3(t)\dot{t}[\varphi^{0\prime}(t) + \overline{\varphi^{0\prime}(t)}] = \qquad (1.14)$$

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$$= iK\ 2\dot{t}\ \ddot{t}\ \overline{f_1(t)} - 2\dot{t}^2 \frac{d}{ds}(\dot{t}\ \mathrm{Im}[i\dot{t}\ \overline{f_1(t)}]) + (a_1 + a_2)\dot{t}[\varphi^{0\prime}(t) + \overline{\varphi^{0\prime}(t)}]. \qquad (1.14)$$

In the case where the plate lies outside the contour , (an infinite plate with a hole), then the corresponding boundary condition is

$$a_1\varphi_*(t) + \overline{t\varphi_*'(t)} + \overline{\psi_*(t)} - a_1(t)[\varphi_*'(t) + \overline{\varphi_*'(t)}] = f_3(t) \qquad (1.15)$$

where

$$t) = \frac{f_{**}(t)}{\alpha_2(t)};\ \alpha_1(t) = \frac{i\dot{t}K(a_1 + a_2)}{2(1 - iK\dot{t}\ \ddot{t})}. \qquad (1.16)$$

By means of a suitable holomorphic solution of (15) it is easy to arrive at the equivalent system of two singular-integro-differential equations described in the work of N.P. Vekua (Ref. 4: Ob odnoy sisteme singulyarnykh integro-differentsial'nykh uravneniy i

yeye prilozhenii v granichnykh zadachakh lineynogo sopryazheniya, Trudy Tbil. matem. in-ta, t. XXIV, 1957) and hence to Fredholm's equivalent system of integral equations. [Abstractor's note: Fredholm's system not described]. In the case of a singly connected region (finite or infinite) Γ may be transformed into the unit circle γ, by means of a function $z = \omega(\xi)$, where $\xi = \rho' e^{i\theta} = \rho'\sigma$. Then (1.13) becomes

$$a_4(\sigma)\left[a_1\varphi(\sigma) + \frac{\omega(\sigma)}{\omega'(\sigma)}\overline{\varphi'(\sigma)} + \overline{\psi(\sigma)}\right] - a_5(\sigma)\left[\frac{\varphi'(\sigma)}{\omega'(\sigma)} + \overline{\frac{\varphi'(\sigma)}{\omega'(\sigma)}}\right] = f_2(\sigma) \qquad (2.4)$$

on γ. As an example the authors consider a plane with an elliptical hole reinforced by a rib. The case of an infinite plane with a circular hole strengthened by a rib may be obtained from the case of the elliptic hole, by writing m = 0 throughout. There are 2 tables and 8 Soviet-bloc references.

ASSOCIATION: Instytut mekhaniki AN URSR - L'vivs'kyy derzhuniversytet (Institute of Mechanics of the AS UkrSSR - State University of L'viv)

SUBMITTED: March 6, 1961

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FLEYSHMAN, N.P., kand.fiziko-matematicheskikh nauk, dotsent

Some inverse problems for plates having holes with edges reinforced with thin ribs. Izv.vys.ucheb.zav.; mashinostr. no.7:27-36 '61. (MIRA 14:9)

1. L'vovskiy gosudarstvennyy universitet.
(Elastic plates and shells)

FLEYSHMAN, N.P., kand.fiziko-matematicheskikh nauk

Circular and annular plates with minimum weight. Rasch.na prochn. no.8:127-135 '62. (MIRA 15:8)
(Elastic plates and shells)

Fleyshman, N. P.

BOROVSKIY, P. V. PHASE I BOOK EXPLOITATION SOV/6206 75

Konferentsiya po teorii plastin i obolochek. Kazan', 1960.

Trudy Konferentsii po teorii plastin i obolochek; 24-29 oktyabrya 1960. (Transactions of the Conference on the Theory of Plates and Shells Held in Kazan', 24 to 29 October 1960). Kazan', [Izd-vo Kazanskogo gosudarstvennogo universiteta] 1961. 426 p. 1000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Kazanskiy filial. Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina.

Editorial Board: Kh. M. Mushtari, Editor; F. S. Isanbayeva, Secretary; N. A. Alumyae, V. V. Bolotin, A. S. Vol'mir, N. S. Ganiyev, A. L. Gol'denveyzer, N. A. Kil'chevskiy, M. S. Kornishin, A. I. Lur'ye, G. N. Savin, A. V. Sachenkov, I. V. Svirskiy, R. G. Surkin, and A. P. Filippov. Ed.: V. I. Aleksagin; Tech. Ed.: Yu. P. Semenov.

PURPOSE: The collection of articles is intended for scientists and engineers who are interested in the analysis of strength and stability of shells.

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Transactions of the Conference (Cont.) SOV/6206

COVERAGE: The book is a collection of articles delivered at the Conference on Plates and Shells held in Kazan' from 24 to 29 October 1960. The articles deal with the mathematical theory of plates and shells and its application to the solution, in both linear and nonlinear formulations, of problems of bending, static and dynamic stability, and vibration of regular and sandwich plates and shells of various shapes under various loadings in the elastic and plastic regions. Analysis is made of the behavior of plates and shells in fluids, and the effect of creep of the material is considered. A number of papers discuss problems associated with the development of effective mathematical methods for solving problems in the theory of shells. Some of the reports propose algorithms for the solution of problems with the aid of electronic computers. A total of one hundred reports and notes were presented and discussed during the conference. The reports are arranged alphabetically (Russian) by the author's name.

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Transactions of the Conference (Cont.) SOV/6206

Card 13/14

SAVIN, G.N. [Savin, H.M.]; FLEYSHMAN, N.P. [Fleishman, N.P.]

"Elements of the calculation of thin elastic shells".
Prykl. mekh. 9 no.4:447-448 '63. (MIRA 16:8)

SAVIN, G.N.; FLEYSHMAN, N.P. (Kiev)

"Plates with curvi-linear stiffeners"

Report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

SAVIN, Guriy Nikolayevich; FLEYSHMAN, Nukhim Pinkasovich;
REMENNIK, T.K., red.

[Plates and shells with stiffening ribs] Plastinki i obolochki s rebrami zhestkosti. Kiev, Naukova dumka, 1964. 383 p. (MIRA 17:12)

FLEYSHMAN, N.P.; ROZENTAL', Yu.G. [Rozental', IU.H.]

Stressed state of an open thin-walled structure composed of plates and shells. Visnyk L'viv. un. Ser. mekh.-mat. no.1:76-88 '65. (MIRA 18:12)

L 16101-66 EWA(h)/EWP(k)/EWT(d)/EWT(m)/ETC(m)-6/EWP(w)/

ACC NR: AT6003597 SOURCE CODE: UR/3185/65/000/001/0076/0088

AUTHOR: Fleyshman, N.P.; Rozental', Yu. H.- Rozental', Yu. G.

ORG: none

B+1

TITLE: The stress state of an open thin-walled structure made of plates and shells

SOURCE: Lvov. Universytet. Visnyk. Seriya mekhaniko-matematychna, no. 1, 1965, 76-88

TOPIC TAGS: elasticity, elastic stress, elastic deformation, shell structure, thin shell structure, linear equation, aerospace structure

ABSTRACT: The paper presents the solution to the problem of bending of a thin-walled structure made of three strips and two quarter-circle cylindrical shells of infinite length. For arbitrary loads, the stress-strain state of the structure is described by general linear equations of the thin plate bending theory, the plane problem of the elasticity theory, and the engineering theory of shells. The boundary conditions at the lines of junction between the plates and shells are used for the determination of constants entering into the general solutions of the respective equations. The development of the theory is complemented by a list of values of certain auxiliary functions. The theory is

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ACC NR: AT6003597

applied to the cases of C and [shaped structures. The solutions may be used for the study of stresses in longerons of mobile freight elevators and other load carrying elements. Orig. art. has: 65 formulas, 4 figures, and 1 table.

SUB CODE: 20, 12 / SUBM DATE: none / ORIG REF: 006

Card 2/2

FLEYSHMAN, N.P., doktor tekhn.nauk; GRACH, S.A., kand.tekhn.nauk

Design of circular and annular plates with extrusions and annular stiffeners. Rasch.na prochn. no.11:64-88 '65. (MIRA 19:1)

ACC NR: AT6034485 SOURCE CODE: UR/0000/66/000/000/0023/0029

AUTHOR: Fleyshman, N. P. (L'vov); Galazyuk, V. A. (L'vov)

ORG: none

TITLE: Concentration of stresses in the vicinity of an elliptic opening in a non-slanting spheric shell

SOURCE: Khar'kov. Politekhnicheskiy institut. Dinamika i prochnost' mashin (Dynamics and strength of machines), no. 3. Kharkov, Izd-vo Khar'kovskogo univ., 1966, 23-29

TOPIC TAGS: stress concentration, stress distribution, spheric shell

ABSTRACT: The problem of stress concentrations in the vicinity of an elliptic opening in a spheric shell is generalized to the case of a non-slanting spheric shell with an elliptic opening of finite size and of arbitrary eccentricity. As shown by V. Z. Vlasov in 1962, the problem is expressed by four differential equations

$$\nabla^2 w_j + \mu_j w_j = 0 \quad (j = 0, 1, 2) \tag{1}$$

$$\nabla^2 \chi + 2\chi = 0, \tag{2}$$

where

$$\mu_0 = 2, \quad \mu_{1,2} = 1 \pm i\frac{2R}{\delta}\sqrt{3(1-\nu^2)}, \tag{3}$$

$$\nabla^2 = \frac{R^2}{AB}\left[\frac{\partial}{\partial\alpha}\left(\frac{B}{A}\frac{\partial}{\partial\alpha}\right) + \frac{\partial}{\partial\beta}\left(\frac{A}{B}\frac{\partial}{\partial\beta}\right)\right]. \tag{4}$$

ACC NR: AT6034485

The bending w is the sum of w_1, w_2, and w_3 found by the solution of Eqs. (1) and (2). The components of the stress- and deformation state are given by the functions $w = w(\alpha, \rho)$ and $\chi(\alpha, \rho)$. By choosing proper coordinates, the equations are solved by separation of variables, and the problem is reduced to the determination of the eigenvalues and eigenfunctions of the differential equation of Lameth with periodic boundary conditions. Orig. art. has: 45 equations.

SUB CODE: 20/ SUBM DATE: 01Jun66/ ORIG REF: 009

Card 2/2

UCHASTKIN, Petr Vasil'yevich, kand. tekhn. nauk; TETEREVNIKOV, Vladimir Nikolayevich; MATELENOK, Dmitriy Antonovich; Prinimal uchastiye FLEYSHMAN, P.L.; KOUZOV, P.A., nauchn. red.; DENISOVA, I.S., red.

[Air conditioning of industrial buildings] Konditsionirovanie vozdukha v promyshlennykh zdaniiakh. Moskva, Profizdat, 1963. 422 p. (MIRA 17:5)

1. Rukovoditel' laboratorii konditsionirovaniya vozdukha Vsesoyuznogo nauchno-issledovatel'skogo instituta okhrany truda, Leningrad (for Uchastkin).

PHASE I BOOK EXPLOITATION SOV/4207

Penoplastmassy; sbornik statey (Foam Plastics; Collection of Articles) Moscow, Oborongiz, 1960. 192 p. Errata slip inserted. 5,050 copies printed.

Ed.: A.A. Moiseyev, Candidate of Technical Sciences, V.V. Pavlov, and M.Ya. Borodin; Managing Ed.: A.S. Zaymovskaya, Engineer; Ed. of Publishing House: I.A. Suvorova; Tech. Ed.: V.I. Oreshkina.

PURPOSE: This book is intended for engineers and technicians planning and manufacturing products and structures using lightweight fillers, and for workers of the foam plastic industry.

COVERAGE: The volume contains 13 studies on foam plastics and foaming agents. Some of the studies provide data on the technology of producing foam plastics from polystyrene and polyvinyl chloride, and data on thermosetting polymers (phenol rubber compositions, polyurethane foam, polyepoxy foam, and foam plastic sheets based on organic silicon resins). Other studies contain data on the composition of foam plastics, the effect of technological factors and volumetric weight on the physical, mechanical, and dielectric properties of foam plastics, and on the fields of application of foam plastics. Several studies deal with the production technology of radomes and reflectors for antenna installations in aircraft units. It is stated in the forevord that the Soviet Union produces and uses foam plastic sheets based on thermoplastic and thermosetting polymers of rigid, elastic, foamy, and porous structure. Fifteen such plastics including some of their specifications and applications are listed. There are no bibliographies but the authors cite Soviet and other authorities including A.A. Berlin, the author of Osnovy proizvodstva gazonapolnennykh plastmass i elastomerov (Principles of Production of Gas Filled Plastics and Elastomers) published by Goskhimizdat in 1954.

Khimenko, G.S., V.A. Popov, S.L. Fleyshman, K.P. Gorskiy, and G.M. Smolentsev. Application of Foam Material PK-20-ST in the Manufacture of Antenna Reflectors of Aircraft Radio Electronic Equipment 109
This study data on the physical, mechanical, and dielectric properties of foam material PK-20-ST. It also includes data on the design of antenna reflectors, the molds for reproducing such reflectors, and their fields of application. It is concluded that antenna reflectors made from foam material can be produced at a lower cost than from metal.

Kafengauz, A.P. and Ye. I. Yudicheva. Production of Gas Filled Polyurethanes 117
This study [illegible] the technology of producing gas filled polyurethanes, the properties of polyurethanes, and fields of application. It also includes data on the polyesters, diisocyanates, catalysts, and emulsifying agents used in the production of gas filled polyurethanes.

Moiseyev, A.A., and T.F. Durasova. Foam Plastic Sheets Based on Polystyrene and Polyvinyl Chloride 19
Production of foam plastic sheets by the press and autoclave methods are described along with production from individual granules, as well as by mixing the composition on rollers. The technological process for the production of polystyrene and polyvinyl chloride foams is described giving the physical and mechanical properties of the foams. Soviet foam products are compared with those of Britain, the United States, East Germany and West Germany.

Pavlov, V.V., M.S. Goryachev, and T.F. Durasova. Using Polyurethane Foam Sheets in Aircraft Structures 131
This study contains data on the technology of producing radomes and dielectric grating reflectors for antenna installations. It also includes data on various ways of filling the structures with foam material

Borodin, M.Ya., and Z.I. Kazakova. Foam Plastic Sheets From Organic Silicon 157
This study contains data on the production technology and properties of foam plastic sheet K-40 made from organic silicon. High thermal stability and good dielectric and heatproof properties make this foam plastic suitable for applications in the field of radio engineering and heat insulation at temperatures of 200-250° up to 500 hours and at temperatures of 300-350° up to 50 hours.

Losev, I.P., D.A. Kuznetsov, and V.D. Valgin. Foam Plastic Sheets Based on Polyepoxy Resins With Aromatic Diamines 167
This study contains experimetnal data on the production technology and properties of foam plastic sheets made from polyepoxy resins with aromatic diamines. It also includes data on the interaction of such resins with metaphenylenediamine and on the optimum foaming conditions for the compositions, and on the effect of the surface active compounds on foaming conditions. This type of foam plastic sheet can be used as structural and electric insulation material at operating temperatures up to 110° in the field of aviation and electrical engineering.

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FLEYSHMAN, S.M.; TSELIKOV, F.I.; KRUTIKOV, V.I., inzh., red. [deceased]; PONOMARENKO, S.A., red.; BOBROVA, Ye.N., tekhn.red.

[Rock cuts with catch trenches along tracks] Skal'nye vyemki s putevymi ulavlivaiushchimi transheiami. Moskva, Izd-vo "Transport," 1963. 73 p. (Babushkin. Vsesoiuznyi nauchno-issledovatel'skii institut transportnogo stroitel'stva. Trudy no.52). (MIRA 17:3)

FLEYSHMAN, S. M.

Fleyshman, S. M. "On the classification of flood streams", Meteorologiya i gidrologiya, 1948, No. 6, p. 51-60, - Bibliog: 11 items.

SO: U-2888, 12 Feb. 53, (Letopis' Zhurnal 'nykh Statey, No. 2, 1949).

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413320014-3"

FLEYSHMAN, S. M.

"Mountain Streams," Moscow, Gos. izd-vo geogr. lit-ry, 1951 (Pod. red. M. A. Velikanov).

"Determination of Computed Quantities of Precipitation According to Short Series," Meteorol. i Gidrologiya, No 2, 1954, pp 47-48

The author clarifies the problem of what can be the least length of a series of observations that gives during processing the magnitudes, sufficiently close to the true values, of the daily maximum precipitation with frequency of one time in a 100 years. For this purpose, long series which were at the disposal of the author were divided into short intervals from 40 to 5 years. Having established the relative constancy of the coefficients of variation and asymmetry of the many-years series and also the negligible changes in mean error in the transition from long series to short ones, the author derives a simple formula that permits one to compute the rated daily maximum precipitation with frequency of one time in 100 years with error not exceeding 15% for series numbering 6-10 years of observation. (RZhGeol, No 5, 1955) SO: Sum.No. 713, 9 Nov 55

FLEYSHMAN, S.M., kandidat tekhnicheskikh nauk.

Regulating flood channels with dike systems. Gidr.stroi. 23 no.7: 24-26 '54. (MLRA 7:11)
(Flood dams and reservoirs)

FLEYSHMAN, S.M. kandidat tekhnicheskikh nauk; KARAMYSHEV, I.A. inzhener, redaktor; VERINA, G.P. tekhnicheskiy redaktor.

[Landslides and washouts and the design of roads in regions of their widespread occurrence] Selevye potoki i proektirovanie dorog v raionakh ikh rasprostraneniia. Moskva, Gos. transp. zhel-dor. izd-vo, 1955. 144 p. (Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut zheleznodorozhnogo stroitel'stva i proektirovaniia. Trudy, no. 17) (MLRA 8:8)

(Landslides) (Road construction)

FLEYSHMAN, S.M., kandidat tekhnicheskikh nauk.

Detritus retaining dams for protecting the bed and openings under bridges from flood erosion material. Avt.dor.19 no.3:13-15 Mr '56. (Dams) (MLRA 9:7)

FLEYSHMAN, S.M., kandidat tekhnicheskikh nauk; TSUKANOV, N.A., inzhener.

Packing embankments under winter conditions. Trudy TSNIIS no.18:
14-31 '56. (Railroads--Earthwork) (MLRA 9:10)

FLEYSHMAN, S.M.

20-2-13/60

AUTHOR: Fleyshman, S. M.

TITLE: On the Motion of Structural Soil Floods (O dvizhenii strukturnykh selevykh potokov)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 2, pp.281-284 (USSR)

ABSTRACT: In mountaineous regions soil floods occur due to intensive downpours. They wash away much fine earth from the slopes of the mountains and also drag the weathering products of the solid rocks into their motion. The considerable content of solid phase changes the physical properties of the flow and its dynamical properties; thereby the landslide obtains its great power of destruction. When the solid phase of the landslide chiefly consists of particles of clay and dust (colloid-like or almost colloid-like particles) and when the amount of water in the landslide is comparatively small, the landslide has a compact structure with elastical-viscous-plastic properties. Such flows are here called structural or coherent, something intermediate between a liquid and a solid body. The structural state of the mass existing in the landslide is due

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20-2-13/60

On the Motion of Struotural Soil Floods

to the mutual moleoular attraotion of the hydrophile colloidal particles of clay. The water in such a structure exists as well in the hydrate shells as in the immobilized state. The colloidal particles of this structure form the active part of the landslide. Experimental investigations show the following: The capability of the structural soil flood to keep large heavy inclusions in suspension is a function of the structural (effective) viscosity η_e and the density γ_s of the mass contained in the soil flood. The viscosity depends on the dispersion of the particles. The more colloidal clay--particles are contained in the soil, at the smaller a concentration of the solid phase a given viscosity will be obtained. The motion of a structural soil flood does not begin before the initial resistance to push is overcome by the acting tension. In the next stage the structure is destroyed. Under otherwise equal conditions a soil flood moves more slowly than a flow of water. The conclusions found here do not apply to soil floods, but also to any hydrophile viscous--plastic media (concrete-mixture, clayey solutions, etc.) There are 3 figures, 1 table, and 3 Soviet references.

Card 2/3

On the Motion of Structural Soil Floods 20-2-13/60

ASSOCIATION: All-Union Scientific Research Institute for Transport Construction (Vsesoyuznyy nauchno-issledovatel'skiy institut transportnogo stroitel'stva)

PRESENTED: October 26, 1956, by P. A. Rebinder, Academician

SUBMITTED: October 23, 1956

AVAILABLE: Library of Congress

Card 3/3

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413320014-3"

FLEYSHMAN, S.M., kand.tekhn.nauk

Requirements concerning bridges over flood-water channels. Transp.stroi. 9 no.10:19 O '59. (MIRA 13:2)
(Bridge construction) (Floods)

SOV/98-59-10-6/20

30(1)

AUTHORS: Fleyshman, S.M., Candidate of Technical Sciences, and Tselikov, F.I., Engineer

TITLE: The Use of Stone Deposits to Protect the Banks of Reservoirs From Erosion

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1959, Nr 10, pp 23-25 (USSR)

ABSTRACT: The article is a description of methods used to counteract erosion in the Ust'-Kamenogrosk reservoir on the Irtysh River in 1953, where sections of the bed of the railroad line Ust'-Kamenogorsk-Zyryanovsk were undermined. It was decided to carry out an experiment by dumping rocks straight into the water in order to cover the bank to a depth of 1.5 m. Rocks of an average weight of 20-50 kgs were dumped over a 100 m long section, the gaps between them being filled with locally obtained loess earth. Subsequent observations in 1954-58 showed that no serious erosion of the bank or distortion of the railroad track had taken place even in icy conditions. A similar experiment, conducted in 1956 on the Kakhovka reservoir, the features of which varied considerably from the pre-

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SOV/98-59-10-6/20

The Use of Stone Deposits to Protect the Banks of Reservoirs From Erosion

vious one, involved the use of stone deposits, provided with 2 layers of filtration material (shell-rock ballast and 20 cm stones). The proposed scheme was considerably altered in practice, the layers not being deposited in an orderly fashion, but nonetheless they proved to be an effective protection against erosive action, succeeding in withstanding waves higher than those which broke the embankment in the initial experiment in 1956. The effective anti-erosion action of even the disorderly dumping of rocks was also noted in the case of the Rybinsk reservoir and that at Kninički (Czechoslovakia). The main advantages of the use of stone deposits are their reliability, resistance to wave-action and erosion, the possibility of the process being entirely mechanized, and simplicity. The 2 methods suggested as being most suitable are illustrated in figs.1 and 2. In the first case the process, by which the bank is shaped artificially, must be completed before the basin is filled, while in the second the reservoir must first be filled, the erosive action of the water thus reducing the cost of the operation. The specifications of the stone deposit must be based on the

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SOV/98-59-10-6/20

The Use of Stone Deposits to Protect the Banks of Reservoirs From Erosion

hydrogeological conditions of the area involved, the size of the rocks being determined according to the formulae of either M.N. Gol'dshteyn and P.S. Kononenko (Ref.1) or of A.M. Zhukovets and N.N. Zaytsev (Ref.2). For a slope of 1:3 the weight of stones required to withstand 1 m waves must be at least 30 kg, and for slopes of 1:2 it must amount to 60 kg; the experiments showed that the lower layers of gravel and fine pebbles served as quite efficient draining systems, while the upper layers required to be composed of a percentage of 60-70% of stones of the appropriate weight, as indicated above, in order to prevent erosion or displacement. There are 2 diagrams and 2 Soviet references.

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3(7) SOV/50-59-10-19/25

AUTHOR: Fleyshman, S. M.

TITLE: For a Clear Concept of Flash Floods

PERIODICAL: Meteorologiya i gidrologiya, 1959, Nr 10, pp 49 - 50 (USSR)

ABSTRACT: The periodical "Meteorologiya i gidrologiya", 1958, Nr 9, presented a review of the book "Flash Floods and Their Extension Over the Territory of the USSR" by I. V. Bogolyubova. The book was reviewed by M. A. Velikanov who criticized that "bound" flash floods should not be contrasted with those moving because actually they are both fluid. The author of this article indicates that Velikanov is wrong. As the flash flood moves it may be in a state similar to that of solid bodies or liquids. In the latter case it exhibits some turbulence which is incorrectly denied by Velikanov. There is 1 Soviet reference.

Card 1/1

FLEYShMAN, S. M. Dr. Tech Sci -- (diss) "Investigation of the Structural Mechanical Properties of Flood Streams And the Practical Application of Its Results in Planning Roads in Areas Frequently Flooded," Moscow, 1960, 39 pp, 220 copies (Moscow Construction Engineering Institute im V. V. Kuybyshev) (KL, 46/60, 125)

FLEYSHMAN, S.M., kand.tekhn.nauk; TSELIKOV, F.I., inzh.; FRADKIN, I.Z., inzh.

Protection of the road bed in the proximity of reservoirs. Put' i put.khoz. 4 no.3:12 Mr '60. (MIRA 13:5)
(Railroad engineering)

FLEYSHMAN, S.M., kand.tekhn.nauk; TSELIKOV, F.I., inzh.

Good manual on track protection against falling rocks ("Protective structures against falling rocks on railroads" by N.M.Roinishvili. Reviewed by S.N.Fleishman, F.I.Tselikov). Put' i put.khoz. 4 no.9: 47 S '60. (MIRA 13:9)
(Railroads—Safety measures) (Roinishvili, N.M.)

FLEYSHMAN, S.M., kand.tekhn.nauk; TSVELODUB, B.I., inzh.; TSELIKOV, F.I., inzh.

Laying out railroad beds on rocky slopes. Transp.stroi. 10 no.7:36-39 Jl '60. (MIRA 13:7)
(Railroads--Earthwork)

BERUCHEV, G.M.; BEGISHVILI, K.R.; FLEYSHMAN, S.M.

Main types of flash floods and peculiarities of structural mud floods. Izv. AN SSSR. Ser. geog. no.6:24-28 N-D '60. (MIRA 13:10)

1. Gosudarstvennyy institut proyektirovaniya vodnogo khozyaystva GruzSSR, Gruzinskiy pedagogicheskiy institut im. A.S. Pushkina i Nauchno-issledovatel'skiy institut transportnogo stroitel'stva. (Floods)

FLEYSHMAN, S.M., kand.tekhn.nauk; TSELIKOV, F.I., inzh.

Stability of road beds in areas of new water reservoirs. Transp. stroi. 10 no.11:35-38 N '60. (MIRA 13:11)
(Railroads--Track)

FLEYSHMAN, S.M.

Residual ground layer formed during the motion of viscoplastic media. Koll. zhur. 22 no. 6:717-719 N-D '60. (MIRA 13:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut transportnogo stroitel'stva, Moskva.
(Colloids) (Fluid dynamics)

FLEYSHMAN, S.M., kand.tekhn.nauk

Planning roads in areas endangered by torrential floods. Avt. dor. 23 no. 12:16-17 D '60. (MIRA 13:12)
(Roads--Design) (Flood control)

FLEYSHMAN, S.M.

Influence of geographical conditions on mudflows and their classification. Izv. AN SSSR. Ser. geog. no.5:40-44 S-O '64. (MIRA 17:11)

FLEYSHMAN, S.M., kand. tekhn. nauk; TSELIKOV, F.I., inzh.

Lateral sections of rock depressions. Transp. stroi. 15 no.7:37-39 Jl '65. (MIRA 18:7)

FLEYSHMAN, S.M., kand.tekhn.nauk; TSELIKOV, F.I., inzh.

Efficient types of structures to prevent landslides.
Transp. stroi. 16 no.1:43-44 Ja '66. (MIRA 19:1)

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L 45406-65 EWT(d)/T IJP(c)

ACC NR: AR6016623 SOURCE CODE: UR/0044/65/000/012/V014/V014

AUTHOR: Fleysher, S. M.

28
B

TITLE: Optimal self-controlling device and conditional probabilities of error detection

SOURCE: Ref. zh. Matematika, Abs. 12V76

REF SOURCE: Tr. Uchebn. in-tov svyazi, vyp. 25, 1965, 11-18

TOPIC TAGS: statistics, error minimization

ABSTRACT: The author defines the structure and probability of error detection for an optimal self-controlling device of repeated signals of unknown form at the m-M stage of transmission under the condition that during the m-1 preceding stages there were μ false alarms and γ correct detections of signal impulses. It turns out that the criterion of optimality of Neyman-Pearson best corresponds to this problem, since at the initial stage of self-control one should assign great weight to false alarms. The increase of noise-stability with each correct detection is smaller as μ decreases and γ becomes greater, and the decrease in noise-stability with each false alarm is larger as γ decreases. L. Subbotin [Translation of abstract]

SUB CODE: 12

Card 1/1 hs UDC: 519.240

BESHKETO, V.K.; KOZLOVSKIY, M.G.; KUPRIN, V.A.; FLEYSHMAN, V.A.; MALAKHOV, K.N., inzh., retsenzent; POTAPOV, V.P., inzh., red.; VOROB'YEVA, L.V., tekhn. red.

[Transportation service for industrial enterprises; from the experience of the West Siberian Railroad] Transportnoe obsluzhivanie promyshlennykh predpriiatii; iz opyta Zapadno-Sibirskoi zheleznoi dorogi. Moskva, Transport, 1964. 86 p. (MIRA 17:1)

FLEYSHMAN, V.G

[redacted]

Conference of chlorine industry workers. Khim.prom. no.5:316-317 Jl-Ag '56. (MLRA 9:11)
(Chlorine industry)

FLEYSHMAN, V. G.

64 - 7- 5/12

AUTHOR: Fleyshman, V. G.

TITLE: The Development of the Chlorine- and Chlorine Products Industry in the USSR (Razvitiye promyshlennosti khlora i khloroproduktov v SSSR).

PERIODICAL: Khimicheskaya Promyshlennost', 1957, Nr 7, pp.(411)27 - (416)32 (USSR)

ABSTRACT: First, a survey is given of the development of the chlorine industry before and after 1917. There follow some data on the technical development of this industry in its various departments. The newest electrolyzers with diaphragms of the type BGK-17 for 20 000 A, wire-gauze cathode, pump diaphragm, current conduct from below, and plate anode have already been tested. At present new types of electrolyzers with diaphragms for 50 000 - 100 000 A are being developed. In 1956 a new electrolyzer with a mercury cathode for 30 000 A, 5000 A/sqzm current density and sinkable anodes have been developed. At present automatic compound block evaporation plants for the evaporating of electrolytic lyes in one stage are being worked out at the scientific

CARD 1/2

The Development of the Chlorine- and Chlorine Products Industry in the USSR 64 - 7 -5/12

research institute for chemical machine building. Evaporation of the caustic soda is carried out up to 720-750 g/litre. A survey is then given of the production of some anorganic and chlorine-organic chlorine products. There is 1 table.

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